IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Applicants	:	LeRoy Dickson et al.
Application Serial No.:		09/965,123
Filing Date	:	September 27, 2001
Title:		DOE-BASED SYSTEMS AND DEVICES FOR PRODUCING LASER BEAMS HAVING MODIFIED BEAM CHARACTERISTICS
Examiner	:	Fayez Assaf
Group Art Unit	:	2872
Attorney Docket No.	:	108-010USANA0

Honorable Commissioner of Patents
and Trademarks
Washington, DC 20231

RESPONSE TO OFFICE ACTION MAILED JUNE 4, 2003

Sir:

In response to the Office Action mailed in the present Application on June 4, 2003, Applicants submit the following amendments to the same:

AMENDMENT OF THE SPECIFICATION:

On Page 1, please amend the first paragraph as follows:

RELATED CASES

The present Application is a Continuation of Application 09/071,512 filed May 1, 1998, now abandoned, which relates to: Application Serial No. 08/573,949 filed December 18, 1995, now abandoned; Application Serial No. 08/726,522 filed October 7, 1995, now U.S. Patent No. 6,073,846; Application Serial No. 08/886,806 filed April 22, 1997, now U.S. Patent No. 5,984,185; Application Serial No. 08/854,832 filed May 12, 1997, now U.S. Patent No. 6,085,978; and Application Serial No. 08/949,915 filed October 14, 1997, now U.S. Patent No. 6,158,659; each said Application being commonly owned by Metrologic Instruments, Inc. of Blackwood, New Jersey, and incorporated herein by reference in its entirety.

Per the Examiner's request, on page 51 of the Substitute Specification filed April 3, 2002, the fifth paragraph, which contains equation 7, should read as follows:

As indicated at Block D in Fig. 3F1, the fourth step of the design procedure involves solving for the angle of incidence θ_{i2} at DOE D2, using the following equation:

$$\theta_{i2} = \arctan\left[\frac{1}{2}\left(M\frac{2}{2}K - K + \frac{1}{K}\right)\right] \qquad \text{(Eq.7)}$$

where $\qquad K = \dfrac{d_1 \cos\theta d_1}{\lambda}$

On Page 55, the first full paragraph, which contains Equation 8, should read as follows:

Having designed a laser beam producing system using the above-described design procedure, the dispersion characteristics thereof can be analyzed by using the following equation:

$$\theta_{d2}(\lambda_R) = \arcsin\left[\frac{\lambda_R}{d_2} + \sin\rho\sqrt{1-\left(\frac{\lambda_R}{d_1} - \sin\theta_{i1}\right)^2} - \cos\rho\left(\frac{\lambda_R}{d_1} - \sin\theta_{i1}\right)\right] \qquad \text{(Eq. 8)}$$

Equation (8) can be used to plot the deflection (i.e. diffraction) angle of each wavelength component in the laser beam output from any laser beam producing system designed and constructed in accordance with the principles of the present invention. A geometrical optics model is presented in Fig. 5A for dispersion analysis of the output laser beam. A graphical representation of dispersion analysis is provided in Fig. 5B, showing a plot of diffraction angle θ_{d2} as a function of wavelength component of the output laser beam. Inasmuch as the sole objectives for the DOE-subsystem design process described hereinabove are shaping the laser beam without introducing dispersion, the values for the expansion factors M1 and M2 and angle of incidence θ_{i1} specified at Block A in Fig. 3E1 can be varied to obtain virtually any acceptable solution (provided that the Beam Shaping Factor $M=M_1M_2$ is satisfied).